

Lehnert GmbH

Service-Abteilung

HIFI-SYSTEM 9000

SERVICE - UNTERLAGEN / SERVICE MANUAL

DIRECT DRIVE TURNTABLE

WITH CARTRIDGE

Modell/Model PS 904



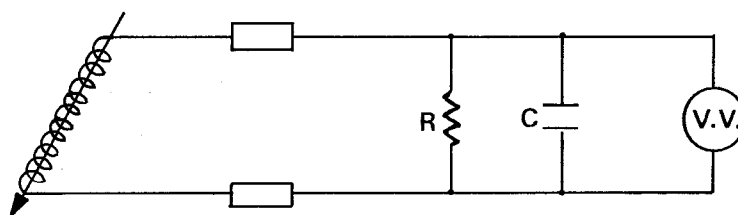
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SPECIFICATIONS

DRIVE SYSTEM	Direct drive
TYPE OF MOTOR	72 pole FG AC Servomotor
RATED SPEED	2 speed, 33-1/3 and 45 rpm.
TONE ARM ASS'Y	
Type of system	Static balance
Head shell	Detachable, aluminum pressed
Counter weight	Adjustable.
Anti-skating system	Adjustable spring type.
Cartridge	Shure M-75-6S-M
STYLUS PRESSURE	2 gr \pm 0.5 gr
STARTING TORQUE	250 gr - cm
POWER CONSUMPTION	12 W
SPEED ADJUSTABLE RANGE (Pitch control)	
45 rpm	-3%
33-1/3 rpm	-3%
LOAD REGULATION	
Speed deviation range at 45 rpm	within 0.2%
Speed deviation range at 33-1/3 rpm	within 0.2%
WOW AND FLUTTER	0.15%
STARTING TIME	3.0 Sec.
SPEED DRIFT	within 0.3%
S/N RATIO	
2nd Frequency component (75-150 Hz)	55 dB
INSULATION RESISTANCE TEST	10 Mohm
DIELECTRIC TEST	Apply 4000V 50Hz

CIRCUIT DIAGRAM FOR TEST AND MEASUREMENT



R: 50Kohm
C: 200pF
VTVM: Zin 1 Mohm or more

POWER SOURCE	220V 50Hz
ACCESSORIES	45 rpm adapter Shell stand
TOTAL DIMENSIONS	(W) 448 x (D) 354 x (H) 172 mm
NET WEIGHT	9 Kg.

TROUBLESHOOTING

Sympton	Cause	Remedies
Platter does not rotate when tone arm is moved manually or by automatic start operation.	<ol style="list-style-type: none"> 1. Motor is not powered. 2. Motor and motor circuit are defective. 3. Switch lever remains in contact with the switch. 	<ul style="list-style-type: none"> * Check if the power cord is plugged in or the fuse is blown when the neon lamp also does not light. * Check the transistors in the power circuit. * Check voltage of each part of the servo circuit board. * Adjust the switch lever for correct clearance.
Platter speed is not correct.	<ol style="list-style-type: none"> 1. The circuit board is out of fine adjustment. 	<ul style="list-style-type: none"> * Adjust so that it rotates correctly for either 33 or 45 rpm.
Motor rotates at high speed without being controlled by the servo system.	<ol style="list-style-type: none"> 1. The printed pattern, capacitors etc. are short-circuited. (Capacitors particularly should be checked carefully.) 	<ul style="list-style-type: none"> * Separate the short-circuited points.
Unbalanced motor rotation.	<ol style="list-style-type: none"> 1. Platter is not correctly fitted in place. 2. Any one of transistors in the drive unit is defective. 	<ul style="list-style-type: none"> * Fit the platter on the motor shaft correctly. * Check voltage.
Platter stops at a point when held by hand. (Dead point occurs.)	<ol style="list-style-type: none"> 1. Either one of the Hall elements is defective. 2. Input or output of the Hall elements is incompletely soldered. 	<ul style="list-style-type: none"> * Replace * Solder it completely.
Cycle change will not work.	<ol style="list-style-type: none"> 1. Trip lever and engagement shoe of the main gear malfunction. 	<ul style="list-style-type: none"> * Check that trip lever returns after completing the change cycle, and that the engagement shoe moves smoothly and freely with its own weight.
No sound is reproduced while playing.	<ol style="list-style-type: none"> 1. Cartridge is defective. 2. Wiring is not correct. (Live and earth are connected inversely.) 3. Stylus is defective. 4. Amplifier is defective. 	<ul style="list-style-type: none"> * Replace * Check the wiring * Replace * Check the amplifier
Stylus does not follow the groove correctly.	<ol style="list-style-type: none"> 1. Dust or foreign matter is in the record groove. 2. Stylus is dirty or defective. 3. Lead wires in tone arm are tangled or too tight. 4. Tracking force is abnormal. 5. Tone arm bearings have too much friction. 	<ul style="list-style-type: none"> * Clean * Clean or replace. * Slacken the wires. * Adjust * Replace tone arm
Motor rumble is heard while playing.	<ol style="list-style-type: none"> 1. Motor is defective. 2. Transformer is defective. 	<ul style="list-style-type: none"> * Check if bearing shake is excessive. * Replace it. * Check if the transformer is floating.
Tone arm does not lead out.	<ol style="list-style-type: none"> 1. The lead-out groove is not standard. 	<ul style="list-style-type: none"> * It may not lead out when old or non-standard records such as film records are used. * Lead-out will not occur if the pitch of the lead-out groove is less than 3mm. * Check if the tracking force is correct. * Check if trip mechanism does not operate smoothly.

PARTS LIST FOR EXPLODED SCHEMATIC (A)

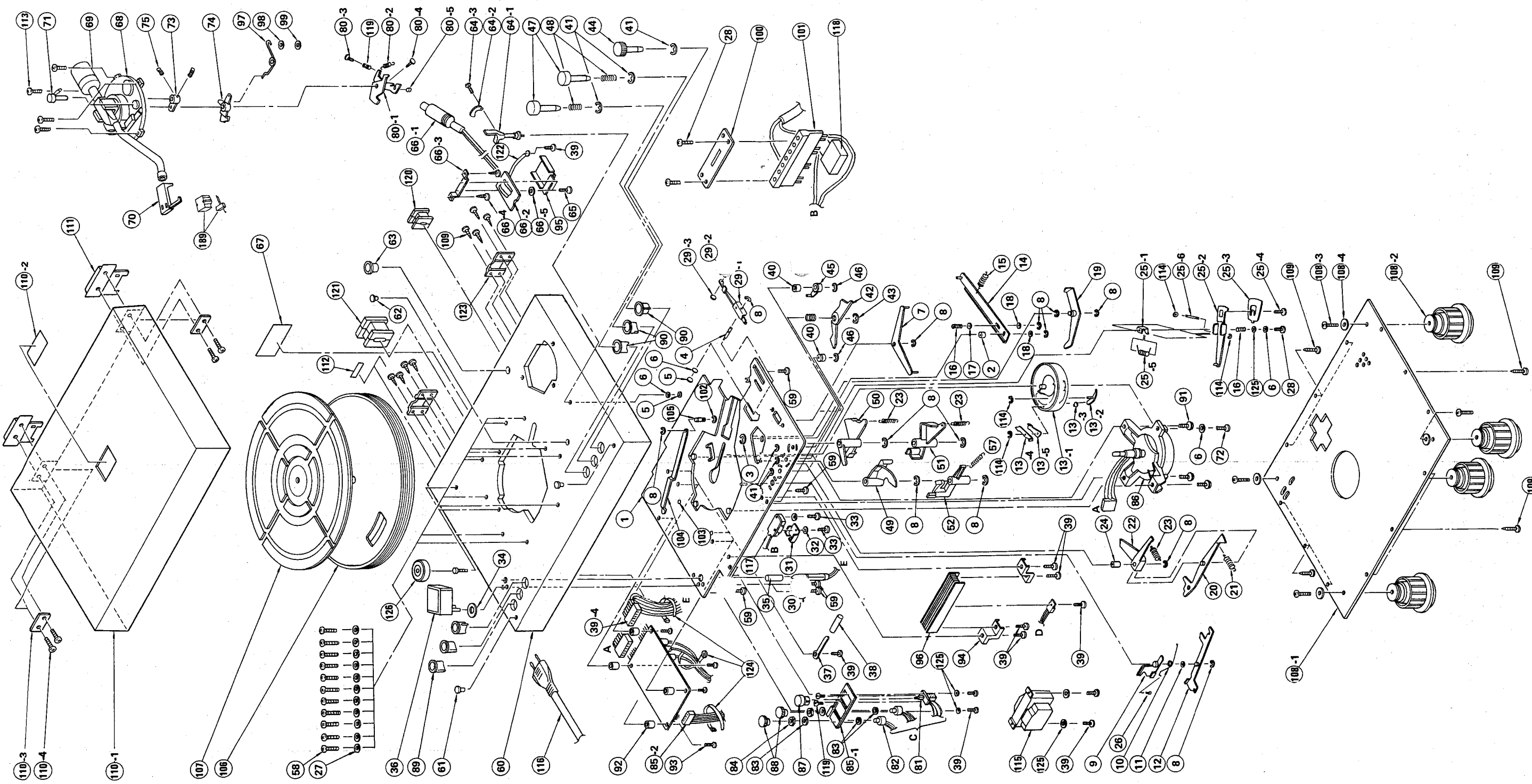
NO.	PARTS CODE NO.	DESCRIPTION	Q'TY
1	851077	Sub Chassis Ass'y	1
2	891428	Eccentric Shaft	1
3		E-Type Bow-washer, E-6	1
4	890095	Cut Lever Shaft	1
5		3 mm Lock Nut for Armrest, FLN-3	6
6		3 mm Spring Washer for Armrest, SSW-3	2
7	891431	Switch Lever (1) Ass'y	1
8		3 mm Dia. E-Type Washer, E-3	12
9	891432	Clutch Lever	1
10	891474	Clutch Lever Spring	1
11		Iron Washer, FW 6 ϕ x 13 ϕ x 0.5t	1
12	891016	Switch Lever (2) Ass'y	1
13	870317	Main Gear Ass'y	1
13-1	892675	Main Gear Ass'y (1)	1
13-2	891007	Change Lever Ass'y	1
13-3	891485	Change Lever Spring	1
13-4	891850	Clutch Plate	1
13-5	891005	Clutch Guide	1
14	891435	Select Arm Ass'y (1)	1
15	891438	Select Arm Spring	1
16	891475	Safety Spring	2
17		Iron Washer, FW 4.5 ϕ x 12 ϕ x 0.8t	1
18		Iron Washer, FW 4.5 ϕ x 12 ϕ x 0.5t	2
19	891437	Select Guide Ass'y (1)	1
20	870157	Start Lever Ass'y (1)	1
21	891443	Start Lever Spring	1
22	891444	Repeat Lever	1
23	893566	Cam Spring	3
24	891445	Bush (1)	1
25	870172-1	Revolver Arm Ass'y	1
25-1	892475	Revolver Base	1
25-2	891021-1	Revolver Arm Ass'y (1)	1
25-3	891022-1	Revolver Plate (2)	1
25-4		3 x 6 mm Round-head Screw, FMT \oplus 3 x 6	1
25-5	891949	Revolver Plate Spring	1
25-6	891064	Revolver Plate Shaft	1
26	891947	Clutch Lever Coil Spring	1
27		Iron Washer, FW 3.2 ϕ x 10 ϕ x 1t	3
28		3 x 6 mm PH-Type Round-head Screw, FM \oplus 3 x 6	5
29	891785	Cueing Seasaw Ass'y	1
29-1	891784	Cueing Seasaw	1
29-2	891066	Eccentric Pin (2)	1
29-3		E-Type Bow-washer, E-3	1
30	871100-3	Power Source Connector Ass'y	1
30-4	895205	Connector Housing	1
30-6	894001-1	Neon Lamp NE-2HU	1
31	890335	Switch Cover	1
32		Iron Washer, FW 3.2 ϕ x 6 ϕ x 0.5t	2

NO.	PARTS CODE NO.	DESCRIPTION	Q'TY
33		3 x 16 mm PH-Type Round-head Screw, FM \oplus 3 x 16	3
34		O-Type Ring, P-8	1
35	895692	UL-Tube 6.6 ϕ x 7.7 ϕ x 24	1
36	895659	Lamp Housing	1
37	890755	Lag	2
38		UL-Tube, 3 ϕ x 60	2
39		3 x 8 mm Round-head Tapped Screw, BT \oplus 3 x 8	7
40	896261	Lever Boss	3
41		5 mm E-Type Bow-washer, E-5	3
42	893557	Repeat Cancellor	1
43		6 mm Dia. E-Type Washer, E-6	1
44	895173	Repeat Lever Ass'y	1
45	895174	Repeat Cam	1
46		E-Type Bow-washer, E-3	1
47	895177	Operation Button Ass'y	2
48	892084-1	Button Spring	2
49	895178	Operation Lever	1
50	895179	Start Cam (1) ABS	1
51	895181	Start Cam (2) ABS	1
52	895183	Reject Lever ABS (Black)	1
57	892000-1	IFC Spring	1
58		3 x 16 mm Round-head Tapped Screw, BT \oplus 3 x 16	11
59		3 x 8 mm Round-head Screw, FMT \oplus 3 x 8	4
60	846696	Cabinet Case	1
61	892874	Dust Cover Cushion (Black)	2
62	895188	Bush (Return Adjustment)	1
63	892373	Head Shell Stand	1
64	895322	Tone Arm Rest Ass'y	1
64-1	895321	Arm Rest Base	1
64-2	890429-1	Lock Lever	1
64-3		Lock Screw, FMT \oplus 2.6 x 6	1
65		Round-head Screw, WM \oplus 3 x 8	2
66	896793	Phone P. C. Board Ass'y	1
66-1	895891-1	Signal Cable Ass'y	1
66-2	895155	Phone P. C. Board	1
66-3	895154	Phone P. C. Board Fixing Angle	1
66-4		3 x 8 mm Round-head Tapped Screw, BT \oplus 3 x 8	2
66-5		3 mm Gathered Washer, TOW-3	1
67	896660	PL Rating Label	1
68	851433	Tone Arm Base Ass'y	1
69	851432	Tone Arm Body Ass'y (Weight lessening)	1
70	896786	Head Shell	1
71	896263-1	Select Lever Ass'y	1
72		3 x 8 mm Round-head Screw, FM \oplus 3 x 8	1
73	895594	Select Lever	1
74	896151	Selector	1
75		2.6 x 3 mm Stopping Screw, FT \ominus 2.6 x 3	2

NO.	PARTS CODE NO.	DESCRIPTION	Q'TY
76	896771	Elevation Shaft	1
77	832780	Elevation Spring	1
78	892805	Elevation Plate	1
79		2.6 x 5 mm Stopping Screw, FT \ominus 2.6 x 5 (Elevation Plate)	1
80	895867-1	Forward Base (4) Ass'y	1
80-1	895866-1	Forward Base (3) Ass'y	1
80-2	801554	Arm Spring	1
80-3		3 x 20 mm Hexagonal Head Screw, M 3 x 20	1
80-4		3 x 6 mm Hexagonal Head Screw, M 3 x 6	2
80-5	891452-1	Friction Rubber	1
81	851105	Switch (Speed Select)	1
82	703062	Volume Control VM 10A	2
85	871056	Volume Switch Ass'y	1
85-1	895196	Volume Angle	1
85-2	895384	Miniature Connector Ass'y	1
86	631400	Motor Ass'y	1
87	895198	Speed Control Button Ass'y	1
88	895199	Speed Select Button Ass'y	2
89	895202-1	Button Bush (1) black	3
90	895203-1	Button Bush (2) black	3
91		4 x 10 mm Round-head Screw, FM \oplus 4 x 10	3
92	832380-2	Motor Spacer	4
93		3 x 20 mm Round-head Tapped Screw, BT \oplus 3 x 20	4
94	895376	Heatsinker Angle	2
95	895218	Screen Plate	1
96	704136	Heatsinker	1
97	896227	Click Spring	1
98		Iron Washer, FW 3 ϕ x 10 ϕ x 0.5t	1
99	CSTW 3	CS-Tight Washerr	1
100	895521	Terminal Plate	1
101	894691	Collar Terminal Plate	1
103		4 ϕ Steel Ball	1
104	870066	Actuating Arm	1
105	895738	Actuating Arm Pin (Snap Pin)	1
106	620021-1	Turntable	1
107	870034	Turntable Sheet	1
108	871548	Bottom Cabinet Board Ass'y	1
108-1	871563	Bottom Cabinet Board (Lid)	1
108-2	896473	Insulator (Foot Ass'y)	4
108-3		4 x 12 mm Round-head Screw, FM \oplus 4 x 12	4
108-4		Iron Washer, FW 4 ϕ x 10 ϕ x 0.5t	4
109		3.1 x 13 mm Round-head Screw, WM \oplus 3.1 x 13	18
110	851117-3	Dust Cover Ass'y	1
110-1	850201-6	Dust Cover	1
110-2	896661	Cover Cushion (Namer)	1
110-3	895231	Hinge Plate	2
110-4		4 x 8 Round-head Screw, FM \oplus 4 x 8	2

NO.	PARTS CODE NO.	DESCRIPTION	Q'TY
111	895215	Hinge Ass'y	2
112	892031	No. Label	1
113		3 x 10 mm Flat Head Screw (Black), \oplus 3 x 10	4
114		2 mm E-Type Washer, E-2	2
115	871562	Power Transformer Ass'y	1
116	895617	2-Pin Power Supply Cord Ass'y	1
117	870270	Micro Switch	1
118	892428	Condenser 0.047 PF, Rifa	1
119	813681	Lock Spring	1
119-1	895891	DIN Plug Connection Cord	1
120	871025	Cord Bushing (1)	1
121	871026	Cord Bushing (2)	1
122	891965	Earth Wire Ass'y	1
123	895259	Lock Plate	2
124	894408	Wire Fastener	8
125		Iron Washer, FW 3.2 ϕ x 7 ϕ x 0.5t	8
126	890876	45 RPM Adapter	1
127	851432	Main Weight Ass'y	1
128	846724	Carton Box	1
		1) Sleeve	(1)
		2) Master Carton	(1)
		3) Top Pad	(1)
		4) Accessory Pad	(1)
		5) Turntable Case	(1)
129	846499-1	Packing Corner	2
130		Poly. Bag (for Head Shell, Adaptor, Main Weight) 70 x 120	1
131		Poly. Bag (for Turntable), 300 x 400 x 0.3t	1
132		Poly. Bag (for Instruction Booklet), 250 x 350	1
133	827471	Poly. Bag (for Player)	1
	4910402572	Instruction Booklet	1
	4910402550	Guarantee Card	1
189	1004011289	Cartridge "SHURE" (M-75-6S-M)	1
134	631399	Circuit Ass'y	1
135	631282	P. C. Board	1
136		Transistor 2SC 1449 (K) (L), X2	1
137		Transistor 2SC 945 (P), X3-X8, X10	7
138		Transistor 2SA 641 (M), X9, X11	2
139		Bridge Diode SIRBA-40, D8	1
140		Diode F 14C or 1S 1887, D5	1
141		Diode RD. 13E (B), D6	1
142		Diode VD 1121, D7	1
143	702233-1	Insulating Tube (1) 10 ϕ x 5l (Black)	4
144		Metalized Polyester Capacitor 3.5 μ F 200WV, C101	1
145		Electrolytic Capacitor, 10 μ F 350V(250V), C1	1
146		" " 100 μ F 50V, C2	1
147		" " 100 μ F 25V, C3	1
148		" " 0.47 μ F 25V (16V), C13, C14	2
149		" " 1 μ F 25V (16V), C15	1

EXPLODED SCHEMATIC (A)

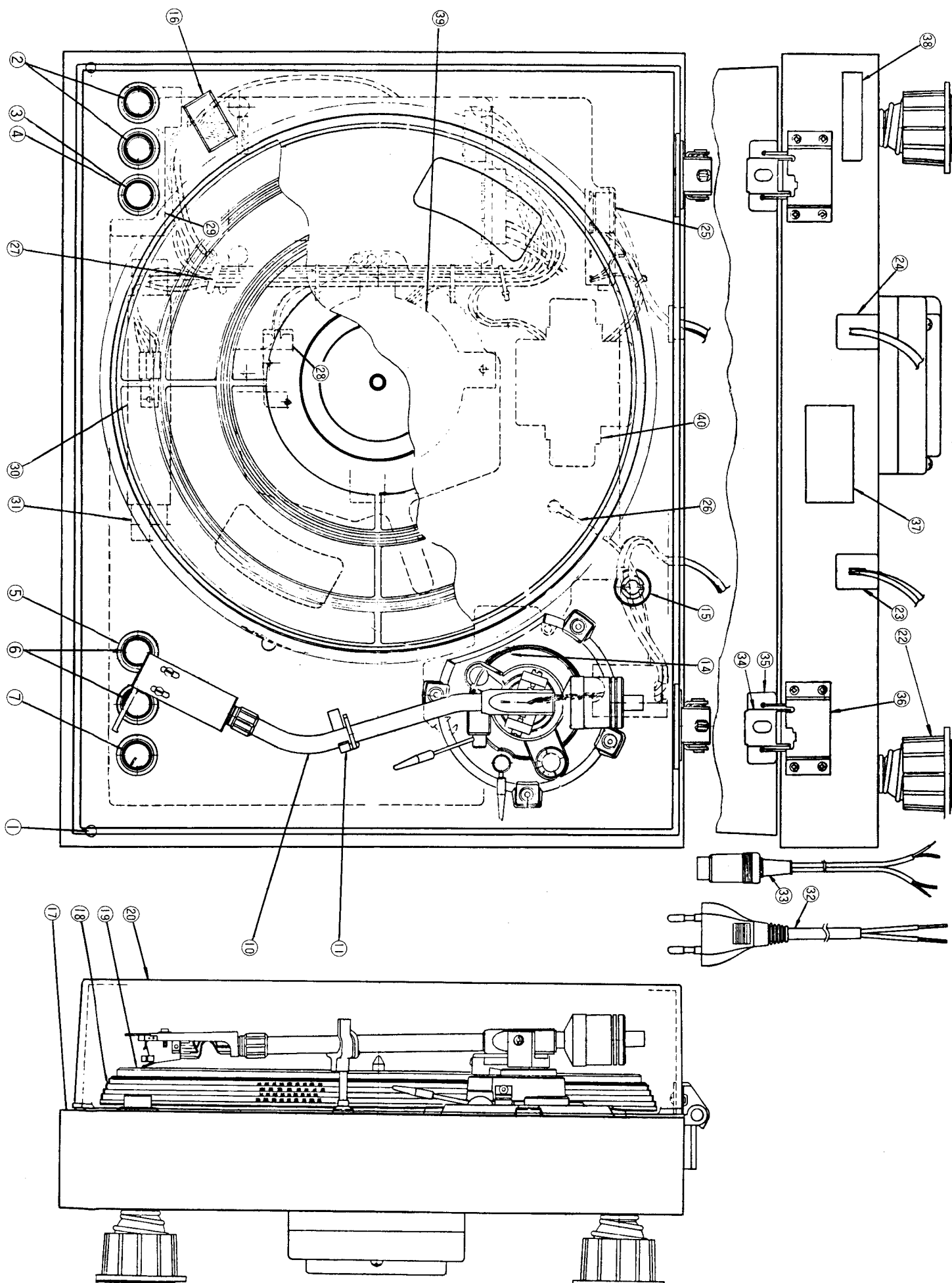


NO.	PARTS CODE NO.	DESCRIPTION	Q'TY
150		Ceramic Capacitor 220PF 50V±10%,C4, C5	2
151		Mica Capacitor 0.01μF 50V±10%, C6, C9, C10, C12	4
152		Mica Capacitor 0.1μF 50V±10%, C7, C8, C11	3
153		Cement Resistor, Vertical, 1 Kohm 10W (K) RGB, 10PH, R101	1
154		Cement Resistor, Vertical, 1 Kohm 7W (K) RGB 7PH, R102	1
155		Cement Resistor, Horizontal, 4.7 ohm 2W (K), R103	1
156		Oxidized Metal Film Resistor 2.2 Kohm 2W (J), R104	1
157		" " " " 8.2 Kohm 2W (J), R105	1
158		Carbonic Resistor 1/4WW(J) 5.6 Kohm, R1, R3	2
159		" " " " 27 Kohm, R2	1
160		" " " " 82 Kohm, R4, R5	2
161		" " " " 12 Kohm, R6, R7, R23	3
162		" " " " 15 Kohm, R10, R11, R13	3
163		" " " " 470 Kohm, R12	1
164		" " " " 33 Kohm, R14, R22	2
165		" " " " 1.8 Kohm, R15	1
166		" " " " 6.8 Kohm, R16, R17	2
167		" " " " 8.2 Kohm, R8, R21	2
168		" " " " 10 Kohm, R20, R24	2
169		" " " " 470 ohm, R25	1
170		" " " " 18 Kohm, R26, R8, R9	3
171		" " " " 1 Kohm, R27	1
172		" " " " 330 Kohm, R28	1
173		" " " " 4.7 Kohm, R19	1
174		5ø Fuse Holder	2
175		Metal Pipe 56 BN 1109	6
176		Volume Control 5 Kohm (B) 1/4W, VRK 4-1, VR1-VR3	3
177	399253-5	Connector Post (Speed Control) No.5048-05A	1
178	704134	Right Angle Wafer Ass'y (A), No.3029-5A	1
179	704135	Right Angle Wafer Ass'y (B), No.5154-07A	1
180		Power Transistor (connecting with Terminal No.3, 4, 5) 2SC 2022 (O) or (Y), X1	1
181 - 186	703448-1	Lead Wires	1 kit
187	892171	Fuse 500 mA, 250V, 5ø	1
188	703621	Fuse Label (500 mAT)	1

PARTS LIST FOR EXPLODED SCHEMATIC (B)

NO.	PARTS CODE NO.	DESCRIPTION	Q'TY
1	892874	Dust Cover Cushion (Black)	2
2	885199	Speed Control Button Ass'y	2
3	895198	Speed Select Button Ass'y	1
4	895202	Button Guide (1)	3
5	895203	Button Guide (2)	3
6	895177	Control Button Ass'y	2
7	895173	Repeat Lever Ass'y	1
10	851432	Tone Arm Ass'y	1
11	895322	Arm Rest Base Ass'y	1
14	892805	Elevation Plate	1
15	892373	Shell Stand	1
16	896659	Lamp Housing	1
17	846696	Cabinet Case	1
18	620021-1	Turntable	1
19	870034	Turntable Sheet	1
20	851117-3	Dust Cover Ass'y	1
22	896473	Insulator (Foot Ass'y)	4
23	871025	Cord Bushing (1)	1
24	871026	Cord Bushing (2)	1
25	851080-2	Sub-chassis Mechanism Ass'y	1
26	891965	Earth Wire Ass'y	1
27	890755	Lag	1
28	895280	Micro Switch Ass'y	1
29	871056	Volume Switch Ass'y	1
30	704136	Heatsinker	1
31	895376	Heatsinker Angle	2
32	895617	2-Pin Power Supply Cord Ass'y	1
33	896793	PH P.C. Board Ass'y	1
34	895215	Hinge Ass'y	2
35	895231	Hinge Plate	2
36	895259	Lock Plate	2
37	896660	PL Rating Label	1
38	892031	No. Label	1
39	631400	Motor Ass'y	1
40	871562	Power Transformer	1

EXPLODED SCHEMATIC (B)



Motor Assy (3) 631263

UL1618AWG No.24
105°C (Blue)

UL1617 AWG No.22
105°C (Red, Black, White)

Circuit Assy 631399

